

Orbital Welding System

Quick Reference Guide



- Arc gap and centering gauges
- Pipe and tube collets and fixtures
- Tungsten electrodes
- Weld head and power supply accessories
- Internal purge pressure kits
- Stainless steel flux
- Tube facing tools

Power Supplies



See these Swagelok® orbital welding system catalogs:

- *M100 Power Supply*, MS-02-102
- *M100 High-Purity Power Supply*, MS-02-305
- *D100 Power Supply*, MS-02-54

Weld Heads



See these Swagelok orbital welding system catalogs:

- *Micro Weld Heads—Series 4 and Series 8*, MS-02-130
For outside diameters from 1/16 to 1/2 in. and 2 to 12 mm
- *Series 5*, MS-02-129
For outside diameters from 1/8 to 5/8 in. and 3 to 16 mm
- *High-Performance Series 8HPH*, MS-02-304
For outside diameters from 1/8 to 1/2 in. and 3 to 12 mm
- *Series 10*, MS-02-131
For outside diameters from 1/4 to 1 in. and 6 to 25 mm
- *Series 20*, MS-02-128
For outside diameters from 1/2 to 2 in. and 12 to 52 mm
- *Series 40*, MS-02-140
For outside tube diameters from 1 1/2 to 4 in. (38.1 to 104 mm) and JIS pipe diameters from 1 1/4 to 4 in. (42.4 to 114.3 mm)

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Arc Gap Gauges

Series 4, Series 8, Series 5, Series 10, and Series 20

Swagelok arc gap gauges promote precise positioning of the electrode in the rotor to help ensure repeatable welds. The easy-to-use gauges eliminate errors associated with sight and feeler gauge adjustments.

Description	Series	Ordering Number
Micro arc gap gauge	4	CWS-4MAG
	8	CWS-8MAG
Arc gap gauge	5	CWS-5AG-A
	10	CWS-10AG
	20	CWS-20AG



Centering Gauges

Series 4, Series 8, Series 5, Series 10, and Series 20

The Swagelok micro weld head centering gauge (Series 4 and 8) promotes accurate centering of weld components in the micro fixture.

Swagelok centering gauges (Series 5, 10, and 20) provide accurate centering of weld components for high-quality welds. A flexible wire lanyard makes it easy to attach the gauge to the fixture block.

Description	Series	Ordering Number
Micro centering gauge	4	CWS-4MCG
	8	CWS-8MCG
Centering gauge	5	CWS-5CG
	10	CWS-10CG
	20	SWS-20CG-A



Series 8HPH

The weld head centering gauge assures the operator that the weld components are centered in the fixture. One centering gauge is included with each high-performance weld head, based on the fixture size specified.

To order an additional centering gauge, select an ordering number from the tables below.



Fractional

Weld Joint Nominal Outside Diameter in.	Ordering Number
1/8	SWS-8HPCG-02
1/4	SWS-8HPCG-04
3/8	SWS-8HPCG-06
1/2	SWS-8HPCG-08

Metric

Weld Joint Nominal Outside Diameter mm	Ordering Number
3	SWS-8HPCG-3MM
6	SWS-8HPCG-6MM
8	SWS-8HPCG-8MM
10	SWS-8HPCG-10MM
12	SWS-8HPCG-12MM

Pipe Collets

Pipe collets are available for use with the Series 20 and Series 40 weld head and fixtures. The cantilever design enables the collet to compensate for variations in nominal pipe diameter. Two collet halves are required per side plate.



Series 20

Fractional

Nominal Pipe Size in.	Ordering Number
1/4	CWS-20UCI-04P
3/8	CWS-20UCI-06P
1/2	CWS-20UCI-08P
3/4	CWS-20UCI-12P
1	CWS-20UCI-16P
1 1/4	CWS-20UCI-20P
1 1/2	CWS-20UCI-24P

Metric

Nominal Pipe Size mm	Ordering Number
10.2	CWS-20UCI-10.2MMP
13.5	CWS-20UCI-13.5MMP
17.2	CWS-20UCI-17.2MMP
21.3	CWS-20UCI-21.3MMP
26.9	CWS-20UCI-26.9MMP
33.7	CWS-20UCI-33.7MMP
42.4	CWS-20UCI-42.4MMP
48.3	CWS-20UCI-48.3MMP

Japanese (JIS)

Nominal Pipe Size in.	Ordering Number
1/4	CWS-20UCI-04PJ
3/8	CWS-20UCI-06PJ
1/2	CWS-20UCI-08PJ
3/4	CWS-20UCI-12PJ
1	CWS-20UCI-16PJ
1 1/4	CWS-20UCI-20PJ
1 1/2	CWS-20UCI-24PJ



Optional support extensions shown above (page 12).

Series 40

Nominal Pipe Size		Ordering Number
in.	mm (JIS)	
1 1/4	42.2	SWS-40CI-20P
1 1/2	48.3	SWS-40CI-24P
2	60.3	SWS-40CI-32P
—	60.5 (50A)	SWS-40CI-60.5MMP
2 1/2	73.0	SWS-40CI-40P
—	76.3 (65A)	SWS-40CI-76.3MMP
3	88.9	SWS-40CI-48P
—	89.1 (80A)	SWS-40CI-89.1MMP
3 1/2	101.6 (90A)	SWS-40CI-56P
4	114.3 (100A)	SWS-40CI-64P

Standard Tube Collets

Series 5, Series 10, Series 20, and Series 40

Swagelok stainless steel tube collets rigidly hold components for welding and are easily changed for varying outside diameters, from 1/8 to 4 in. (3 to 104 mm). Two collet halves are required per side plate.

The patented UCI collet design (Series 5, 10, and 20) accommodates components with a ± 0.005 in. (0.13 mm) tube outside diameter variation.



Fractional

Nominal Tube Size in.	Collet Half Ordering Number
Series 5	
1/8	CWS-5UCI-02
3/16	CWS-5UCI-03
1/4	CWS-5UCI-04
5/16	CWS-5UCI-05
3/8	CWS-5UCI-06
1/2	CWS-5UCI-08
9/16	CWS-5UCI-09
5/8	CWS-5UCI-10
Series 10	
1/4	CWS-10UCI-04
5/16	CWS-10UCI-05
3/8	CWS-10UCI-06
1/2	CWS-10UCI-08
5/8	CWS-10UCI-10
3/4	CWS-10UCI-12
7/8	CWS-10UCI-14
1	CWS-10UCI-16
Series 20	
1/2	CWS-20UCI-08
5/8	CWS-20UCI-10
3/4	CWS-20UCI-12
7/8	CWS-20UCI-14
1	CWS-20UCI-16
1 1/8	CWS-20UCI-18
1 1/4	CWS-20UCI-20
1 1/2	CWS-20UCI-24
2	CWS-20UCI-32
Series 40	
1 1/2	SWS-40CI-24
2	SWS-40CI-32
2 1/2	SWS-40CI-40
3	SWS-40CI-48
3 1/2	SWS-40CI-56
4	SWS-40CI-64

Metric

Nominal Tube Size mm	Collet Half Ordering Number
Series 5	
3	CWS-5UCI-03MM
4	CWS-5UCI-04MM
6	CWS-5UCI-06MM
8	CWS-5UCI-08MM
10	CWS-5UCI-10MM
12	CWS-5UCI-12MM
14	CWS-5UCI-14MM
16	CWS-5UCI-16MM
Series 10	
6	CWS-10UCI-06MM
8	CWS-10UCI-08MM
10	CWS-10UCI-10MM
12	CWS-10UCI-12MM
14	CWS-10UCI-14MM
15	CWS-10UCI-15MM
16	CWS-10UCI-16MM
18	CWS-10UCI-18MM
19	CWS-10UCI-19MM
20	CWS-10UCI-20MM
22	CWS-10UCI-22MM
23	CWS-10UCI-23MM
25	CWS-10UCI-25MM

Metric

Nominal Tube Size mm	Collet Half Ordering Number
Series 20	
12	CWS-20UCI-12MM
14	CWS-20UCI-14MM
16	CWS-20UCI-16MM
18	CWS-20UCI-18MM
20	CWS-20UCI-20MM
22	CWS-20UCI-22MM
25	CWS-20UCI-25MM
28	CWS-20UCI-28MM
35	CWS-20UCI-35MM
40	CWS-20UCI-40MM
52	CWS-20UCI-52MM
Series 40	
38.1	SWS-40CI-24
42.4	SWS-40CI-42.4MM
44.5	SWS-40CI-44.5MM
48.3	SWS-40CI-48.3MM
50.8	SWS-40CI-32
54.0	SWS-40CI-54MM
60.3	SWS-40CI-60.3MM
63.5	SWS-40CI-40
76.2	SWS-40CI-48
88.9	SWS-40CI-56
102	SWS-40CI-64
104	SWS-40CI-104MM

Special-Purpose Tube Collets

Series 5

For Fitting Side Plates 1 and 2

Side plates shown on page 9.

These collets eliminate the need to change fixture blocks/ side plates depending on welding configuration.



Fractional

Nominal Tube Size in.	Collet Half Ordering Number
1/8	CWS-5UFCI-02
1/4	CWS-5UFCI-04
3/8	CWS-5UFCI-06
1/2	CWS-5UFCI-08
5/8	CWS-5UFCI-10

Metric

Nominal Tube Size mm	Collet Half Ordering Number
3	CWS-5UFCI-03MM
6	CWS-5UFCI-06MM
8	CWS-5UFCI-08MM
10	CWS-5UFCI-10MM
12	CWS-5UFCI-12MM

For Fitting Side Plate 2 and Swagelok Micro-Fit® Fittings Adapter Inserts

Side plate and inserts shown on page 9.

Swagelok stainless steel collets provide rigid holding of components for welding. They are easily changed for varying outside diameters. Two collet halves are required per side plate.

Micro-Fit Fitting Sizes	Collet Half Ordering Number
1/8 in., 1/4 in., 6 mm	CWS-5MWCI-04
3/8 in., 8 mm, 10 mm	CWS-5MWCI-06
1/2 in. and 12 mm	CWS-5MWCI-08

For Fitting Side Plate 3

Side plate shown on page 9.

No tools are required to insert or remove these collets.



Fractional

Nominal Tube Size in.	Collet Half Ordering Number
1/8	CWS-5F3UCI-02
1/4	CWS-5F3UCI-04
3/8	CWS-5F3UCI-06
1/2	CWS-5F3UCI-08

Metric

Nominal Tube Size mm	Collet Half Ordering Number
3	CWS-5F3UCI-03MM
6	CWS-5F3UCI-06MM
8	CWS-5F3UCI-08MM
12	CWS-5F3UCI-12MM

Tube Facing Tool

For use with the Swagelok tube facing tool only.

Fractional

Nominal Tube Size in.	Collet Half Ordering Number
1/8	CWS-20UCI-02
1/4	CWS-20UCI-04
3/8	CWS-20UCI-06
1/2	CWS-20UCI-08
3/4	CWS-20UCI-12
1	CWS-20UCI-16
1 1/4	CWS-20UCI-20
1 1/2	CWS-20UCI-24
2	CWS-20UCI-32

Metric

Nominal Tube Size mm	Collet Half Ordering Number
3	CWS-20UCI-3MM
6	CWS-20UCI-6MM
8	CWS-20UCI-8MM
10	CWS-20UCI-10MM
12	CWS-20UCI-12MM
18	CWS-20UCI-18MM
20	CWS-20UCI-20MM
22	CWS-20UCI-22MM
25	CWS-20UCI-25MM
28	CWS-20UCI-28MM
35	CWS-20UCI-35MM
52	CWS-20UCI-52MM

Thin Collets

Series 20

Swagelok stainless steel thin collets for use with the Series 20 weld head and fixtures are specially designed for use with thin side plates and are easily changed for varying outside diameters. Two collets are required per side plate.



Fractional

Nominal Tube Size in.	Collet Half Ordering Number
1/2	SWS-20UCI-08TN
3/4	SWS-20UCI-12TN
1	SWS-20UCI-16TN
1 1/4	SWS-20UCI-20TN
1 1/2	SWS-20UCI-24TN
2	SWS-20UCI-32TN

Metric

Nominal Tube Size mm	Collet Half Ordering Number
12	SWS-20UCI-12MMTN
18	SWS-20UCI-18MMTN
20	SWS-20UCI-20MMTN
22	SWS-20UCI-22MMTN
25	SWS-20UCI-25MMTN
28	SWS-20UCI-28MMTN
35	SWS-20UCI-35MMTN
52	SWS-20UCI-52MMTN

Standard Fixtures

Series 4 and Series 8

Micro Fixtures



Fractional

Micro Fixture Size in.	Ordering Number
Series 4	
1/16	SWS-4MFB-01
1/8	SWS-4MFB-02
3/16	SWS-4MFB-03
1/4	SWS-4MFB-04
Series 8	
1/8	SWS-8MFA-02
1/4	SWS-8MFA-04
3/8	SWS-8MFA-06
1/2	SWS-8MFA-08

Metric

Micro Fixture Size mm	Ordering Number
Series 4	
2	SWS-4MFB-2MM
3	SWS-4MFB-3MM
4	SWS-4MFB-4MM
6	SWS-4MFB-6MM
Series 8	
5	SWS-8MFA-5MM
6	SWS-8MFA-6MM
8	SWS-8MFA-8MM
9	SWS-8MFA-9MM
10	SWS-8MFA-10MM
11	SWS-8MFA-11MM
12	SWS-8MFA-12MM

Series 5, Series 10, and Series 20

Fixture Blocks

Series	Ordering Number	Capacity	
		in.	mm
5	CWS-5TFB	1/8 to 5/8	3 to 16
10	CWS-10TFB	1/4 to 1	6 to 25
20	SWS-20TFB-A	1/2 to 2	12 to 52

Fixture Side Plates and Plenums

Description	Ordering Number
Series 5	
Fixture side plate—left	CWS-5TSPL
Fixture side plate—right	CWS-5TSPR
Plenum	CWS-5PLEN
Series 10	
Fixture side plate—left	CWS-10TSPL
Fixture side plate—right	CWS-10TSPR
Plenum	CWS-10PLEN
Series 20	
Fixture side plate—left	SWS-20TSPL-A
Fixture side plate—right	SWS-20TSPR-A
Plenum	SWS-20BPLEN

Standard Fixtures

Series 8HPH

Fixture kits are available for outside weld joint diameters of 1/8 to 1/2 in. and 3 to 12 mm.

- Each fixture kit includes one fixed plate, two moveable plates, and a centering gauge.
- One fixture kit is included with each high-performance weld head, specified in the original weld head ordering number.

To order an additional fixture kit, select the kit ordering number from the tables below.



Fractional

Weld Joint Nominal Outside Diameter in.	Ordering Number
1/8	SWS-8HPH-SP-02
1/4	SWS-8HPH-SP-04
3/8	SWS-8HPH-SP-06
1/2	SWS-8HPH-SP-08

Metric

Weld Joint Nominal Outside Diameter mm	Ordering Number
3	SWS-8HPH-SP-3MM
6	SWS-8HPH-SP-6MM
8	SWS-8HPH-SP-8MM
10	SWS-8HPH-SP-10MM
12	SWS-8HPH-SP-12MM

Special-Purpose Fixtures

Series 20

Ferrule Mandrels

Position and hold short-tangent sanitary ferrules on center in the weld fixture.



Sanitary Ferrule Size	Ordering Number
1/2 and 3/4 in.	SWS-32MANDREL-812
1 and 1 1/2 in.	SWS-32MANDREL-1624
2 in.	SWS-32MANDREL-32

Thin Side Plates

For use with thin collets (page 7).

Thin Side Plate	Ordering Number
Left	SWS-20FSP1L
Right	SWS-20FSP1R

Mandrel Collets

Mandrel collets hold the mandrels used to position short-tangent sanitary ferrules. Two collect halves are required.

Collet half ordering number: **SWS-20UCI-MC**

Special-Purpose Fixtures

Series 5

Fitting Side Plate 1

Fitting side plate 1 is for use with Swagelok VCR and VCO fittings with captured male or female nuts and weld extension lengths of less than 0.75 in. (19 mm). A centering gauge (page 3) must be used with this fitting side plate.

- Can be used with all other Series 5 fixture side plates

Ordering number: **CWS-5FSP1**

Adapter Inserts for Use with Fitting Side Plate 1

Adapter inserts are used to hold and accurately align the fittings as well as to protect the sealing surfaces during welding.

Fitting	Maximum Overall Length in. (mm)	Ordering Number
1/4 in. VCR gland with captured male nut or 1/4 in. male VCO fitting	1.12 (28.4)	CWS-5MBVCO-04
1/4 in. VCR gland with captured female nut	0.72 (18.2)	CWS-5FVCR-04
1/4 in. VCO gland with captured female nut	0.77 (19.6)	CWS-5FBVCO-04

Fixture Collets for Use with Fitting Side Plate 1

The fixture collets hold adapter inserts. Two collets are required for each insert.

Ordering number: **CWS-5UFCI-.95**

Fitting Side Plate 2

Fitting side plate 2 is for use with Swagelok Micro-Fit fittings and tubing. A centering gauge must be used with this fitting side plate.

- Can be used with all other Series 5 fixture side plates

Ordering number: **CWS-5FSP2**

Tube collets for use with Series 5 fitting side plate 2 are also available. See page 6.

Fitting Side Plate 3

Fitting side plate 3, which simplifies the fixturing and welding of components with a 1/2 in. (12.7 mm) tangent/tube extension, can be used with either the standard or extended plenum. The unique colletting system eliminates the need for tools since collets snap in and out of place.

Description	Ordering Number
Fitting side plate 3—left	SWS-5FSP3L
Fitting side plate 3—right	SWS-5FSP3R

Tube collets for use with Series 5 fitting side plate 3 are also available. See page 6.

Valve Side Plate

The valve side plate is used to hold Swagelok BN, DF, DL, DP, DS, and HB (manual actuator only) series valve bodies with 1/4 in., 3/8 in., and 6 mm tube butt weld end connections.

End Connection Size	Ordering Number	
	Left	Right
1/4 in.	SWS-5FSP4L-04	SWS-5FSP4R-04
3/8 in.	SWS-5FSP4L-06	SWS-5FSP4R-06
6 mm	SWS-5FSP4L-6MM	SWS-5FSP4R-6MM

Extended Plenum

The extended plenum is designed to work with all combinations of Series 5 side plates and fixture blocks. It can be secured in a bench-top vise.

Description	Ordering Number
Extended plenum only	SWS-5PLEN-EXT
Extended plenum with stand	SWS-5PLEN-STAND

Tungsten Electrodes

Series 4, Series 8, Series 5, Series 10, Series 20, and Series 40

Swagelok electrodes, available in multiples of 10, provide consistent, repeatable welds. Electrodes consist of 2 % ceriated tungsten, axially ground to rigid specifications.

Dimensions, in inches (millimeters), are for reference only and are subject to change.



Weld Joint Nominal Outside Diameter		Electrode Diameter (D) in. (mm)	Electrode Length (L) in. (mm)	Ordering Number
in.	mm			
Series 4				
1/16, 1/8, 3/16	2, 3, 4	0.040 (1.0)	0.405 (10.3)	CWS-C.040-.405-P
1/4	6		0.325 (8.26)	CWS-C.040-.325-P
Series 5				
1/8, 3/16	3, 5	0.040 (1.0)	0.705 (17.9)	CWS-C.040-.705-P
1/4, 5/16	6, 8		0.605 (15.4)	CWS-C.040-.605-P
3/8, 1/2	10, 12		0.555 (14.1)	CWS-C.040-.555-P
5/8	14, 15		0.450 (11.4)	CWS-C.040-.450-P
—	16		0.405 (10.3)	CWS-C.040-.405-P
Series 8				
1/8	3, 4	0.040 (1.0)	0.450 (11.4)	CWS-C.040-.450-P
1/4	6, 8, 9		0.405 (10.3)	CWS-C.040-.405-P
3/8	10, 11		0.325 (8.26)	CWS-C.040-.325-P
1/2	12		0.281 (7.14)	CWS-C.040-.281-P
Series 10				
1/4, 5/16, 3/8, 1/2, 5/8	6, 8, 10, 12, 14, 15	0.062 (1.5)	1.105 (28.1)	CWS-C.062-1.105-P
3/4, 7/8, 1	18, 19, 20, 22, 23, 25		0.855 (21.7)	CWS-C.062-.855-P
Series 20				
1/2, 5/8, 3/4, 7/8	12, 14, 16, 18, 20, 22	0.062 (1.5)	1.630 (41.4)	CWS-C.062-1.630-P
1, 1 1/8, 1 1/4	23, 25, 28		1.380 (35.1)	CWS-C.062-1.380-P
1 1/2	35		1.105 (28.1)	CWS-C.062-1.105-P
1 3/4, 2	40, 52		0.855 (21.7)	CWS-C.062-.855-P
Series 40				
1 1/2	38.1	0.094 (2.29)	2.615 (66.4)	SWS-C.094-2.615-P
—	42.4		2.530 (64.3)	SWS-C.094-2.530-P
	44.5		2.489 (63.2)	SWS-C.094-2.489-P
	48.3		2.414 (61.3)	SWS-C.094-2.414-P
2	50.8		2.365 (60.1)	SWS-C.094-2.365-P
—	54.0		2.302 (58.5)	SWS-C.094-2.302-P
	60.3		2.178 (55.3)	SWS-C.094-2.178-P
	63.5		2.115 (53.7)	SWS-C.094-2.115-P
3	76.2		1.865 (47.4)	SWS-C.094-1.865-P
3 1/2	88.9		1.615 (41.0)	SWS-C.094-1.615-P
4	102		1.365 (34.7)	SWS-C.094-1.365-P
—	104		1.318 (33.5)	SWS-C.094-1.318-P

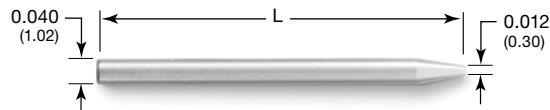
Tungsten Electrodes

Series 8HPH

Swagelok electrodes, available in multiples of 10, provide consistent, repeatable welds. Electrodes consist of 2 % ceriated tungsten, axially ground to rigid specifications

- Electrodes are for use with argon shielding gas. Other shielding gas mixtures may require electrodes with tip diameters other than 0.012 in. (0.30 mm).

Dimensions, in inches (millimeters), are for reference only and are subject to change.



Fractional

Weld Joint Nominal Outside Diameter in.	Nominal Gap in. (mm)	Electrode Length (L) in. (mm)	Ordering Number
1/8	0.020 (0.51)	0.533 (13.5)	SWS-C.040-.533-.012-P
	0.025 (0.64)	0.528 (13.4)	SWS-C.040-.528-.012-P
	0.030 (0.76)	0.523 (13.3)	SWS-C.040-.523-.012-P
	0.035 (0.89)	0.518 (13.2)	SWS-C.040-.518-.012-P
1/4	0.025 (0.64)	0.465 (11.8)	SWS-C.040-.465-.012-P
	0.030 (0.76)	0.460 (11.7)	SWS-C.040-.460-.012-P
	0.035 (0.89)	0.455 (11.6)	SWS-C.040-.455-.012-P
	0.040 (1.02)	0.450 (11.4)	SWS-C.040-.450-.012-P
3/8	0.025 (0.64)	0.403 (10.2)	SWS-C.040-.403-.012-P
	0.030 (0.76)	0.398 (10.1)	SWS-C.040-.398-.012-P
	0.035 (0.89)	0.393 (10.0)	SWS-C.040-.393-.012-P
	0.040 (1.02)	0.388 (9.9)	SWS-C.040-.388-.012-P
1/2	0.030 (0.76)	0.335 (8.5)	SWS-C.040-.335-.012-P
	0.035 (0.89)	0.330 (8.4)	SWS-C.040-.330-.012-P
	0.040 (1.02)	0.325 (8.3)	SWS-C.040-.325-.012-P
	0.045 (1.14)	0.320 (8.1)	SWS-C.040-.320-.012-P

Metric

Weld Joint Nominal Outside Diameter mm	Nominal Gap in. (mm)	Electrode Length (L) in. (mm)	Ordering Number
3	0.020 (0.51)	0.536 (13.6)	SWS-C.040-.536-.012-P
	0.025 (0.64)	0.531 (13.5)	SWS-C.040-.531-.012-P
	0.030 (0.76)	0.526 (13.4)	SWS-C.040-.526-.012-P
	0.035 (0.89)	0.521 (13.2)	SWS-C.040-.521-.012-P
6	0.025 (0.64)	0.472 (12.0)	SWS-C.040-.472-.012-P
	0.030 (0.76)	0.467 (11.9)	SWS-C.040-.467-.012-P
	0.035 (0.89)	0.462 (11.7)	SWS-C.040-.462-.012-P
	0.040 (1.02)	0.457 (11.6)	SWS-C.040-.457-.012-P
8	0.025 (0.64)	0.433 (11.0)	SWS-C.040-.433-.012-P
	0.030 (0.76)	0.428 (10.9)	SWS-C.040-.428-.012-P
	0.035 (0.89)	0.423 (10.7)	SWS-C.040-.423-.012-P
	0.040 (1.02)	0.418 (10.6)	SWS-C.040-.418-.012-P
10	0.030 (0.76)	0.388 (9.9)	SWS-C.040-.388-.012-P
	0.035 (0.89)	0.383 (9.7)	SWS-C.040-.383-.012-P
	0.040 (1.02)	0.378 (9.6)	SWS-C.040-.378-.012-P
	0.045 (1.14)	0.373 (9.5)	SWS-C.040-.373-.012-P
12	0.030 (0.76)	0.349 (8.9)	SWS-C.040-.349-.012-P
	0.035 (0.89)	0.344 (8.7)	SWS-C.040-.344-.012-P
	0.040 (1.02)	0.339 (8.6)	SWS-C.040-.339-.012-P
	0.045 (1.14)	0.334 (8.5)	SWS-C.040-.334-.012-P

Weld Head Accessories

Tool Package

Includes nylon brush, metal brush, tweezers, screwdriver, electrode cleaning tool, hex key set, and a jeweler's screwdriver.

Ordering number: **CWS-WHTOOLPKG**

Remote Pendant

The full functioning Swagelok pendant provides remote push-button operation of the power supply. The pendant, which has a standard cable length of 15 ft (4.6 m), can be lengthened with a 10 ft (3 m) or 35 ft (10.7 m) extension.



Description	Ordering Number
Remote pendant	SWS-M-RPEND
10 ft (3 m) extension	SWS-M-RPEND-10EXT
35 ft (10.7 m) extension	SWS-M-RPEND-35EXT

Weld Head Extension Cables

Swagelok weld head extension cables, when combined with the standard weld head, provide weld head operation of up to a maximum of 50 ft (15.2 m) away from the power supply.



Extension Cable ft (m)	Ordering Number
12.5 (3.8)	SWS-WHEC-B-12.5FT
37.5 (11.4)	SWS-WHEC-B-37.5FT

Support Extensions

Series 40

Use support extensions with collets when welding vertical runs of pipe. The support extensions minimize angular misalignment and provide maximum rigidity. Use in sets of either 4 or 8 pieces.

Description	Ordering Number
Support extension	SWS-40CI-EXT

Micro Fixture Tool

Series 4, Series 8

Engages the fixture latch for easy opening and closing of the micro weld head fixture.

Ordering number: **CWS-MFP-FIXTL**



Cooling Plates

Series 4, Series 8

The faster weld fixtures cool, the more efficient your production can be. Swagelok cooling plates quickly absorb heat away from the micro weld head fixture and components after welding, helping to speed your process.



Weld Head	Ordering Number
Series 4	CWS-4MCP
Series 8	CWS-8MCP

Bench-Mounting Bracket

Series 4, Series 8

Swagelok bench mounting brackets attach rigid- or flexible-micro weld heads to a work bench. The Series 4 bracket features a quick-release mechanism for convenient operation.



Weld Head	Ordering Number
Series 4	CWS-4MBB
Series 8	CWS-8MBB

Motor Modules

Series 4, Series 8

Description	Ordering Number
Series 4	
For use with SWS-4MRH-B and SWS-4MFH-B	SWS-M-MTR-B
Series 8	
For use with SWS-8MRH-B	SWS-M-MTR-B

Work Support System

Series 8HPH

The Swagelok work support system provides a variety of expandable configurations for work support of tubing runs and valves.

- The **left kit** contains the work support slide base, work support rails, thumb screws, and work support left brace.
- The **right kit** contains the work support slide base, work support rails, thumb screws, and work support right brace.
- The **full kit** contains all left and right work support kit components.

Description	Ordering Number
Left kit	SWS-8HPH-WS-LT
Right kit	SWS-8HPH-WS-RT
Full kit	SWS-8HPH-WS

Power Supply Accessories

Power Supply Cords

Replacement power supply cords are available. See the Swagelok *Electrical Power Cord and Plug Options* catalog, MS-02-79, for more information.



Geographic Region	Voltage	Plug Type	Cord/ Wire Type	Power Cord Designator
North America	110/120 V (ac) 50/60 Hz	NEMA 5-15	AWG/SJT	1
	220/240 V (ac) 50/60 Hz	NEMA 5-20	AWG/SJT	9
Japan/Taiwan	110/120 V (ac) 50/60 Hz	NEMA 6-15	AWG/SJT	2
	220/240 V (ac) 50/60 Hz	NEMA L6-20	Harmonized	3
United Kingdom	110/120 V (ac) 50/60 Hz	IEC-309	Harmonized	4
	220/240 V (ac) 50/60 Hz	BS 1363	Harmonized	5
Continental Europe/Korea	220/240 V (ac) 50/60 Hz	CEE 7/7	Harmonized	6
Australia/New Zealand	220/240 V (ac) 50/60 Hz	AS 3112	Harmonized	7

Additional Accessories

Description	Series	Ordering Number
Data memory card	M100, M100 high-purity	SWS-PCCARD-1MB ^①
PC direct interface cable	M100, M100 high-purity	SWS-PC-CABLE ^①
Printer paper package (10 rolls)	M100, D100	CWS-DRP-PAPER
Cleanroom printer paper package (10 rolls)	M100 high-purity	SWS-DRP-PAPER-HP

^① Included with power supply.

Carrying Cases

Rugged plastic cases are suitable for shipping or storage of Swagelok orbital welding system components.



Description	Ordering Number
Purge kit case	SWS-CASE-3
Facing tool case	SWS-CASE-4
Cutting inserts case	SWS-CASE-5
Collet case	SWS-CASE-6
Power supply case	SWS-CASE-7B
Weld head case—series 40	SWS-CASE-8
Weld head case—generic	CWS-WH-CASE

Internal Purge Pressure Kits

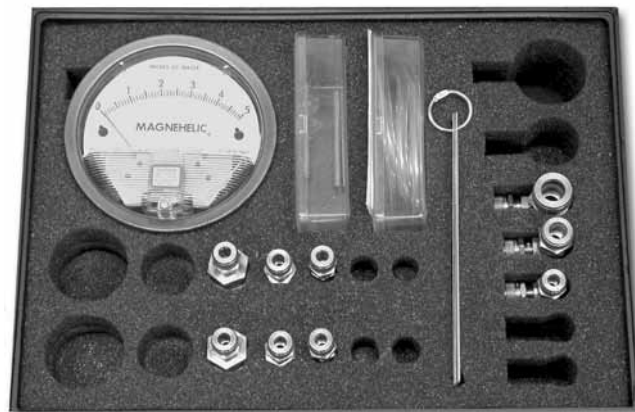
Proper internal purging plays a critical role in ensuring high-quality, uniform orbital welds, especially in ultrahigh-purity and sanitary applications. The Swagelok internal purge pressure kit contains the components needed to set the flow rate of purge gas so that sufficient internal pressure is created in the weld area.

Features

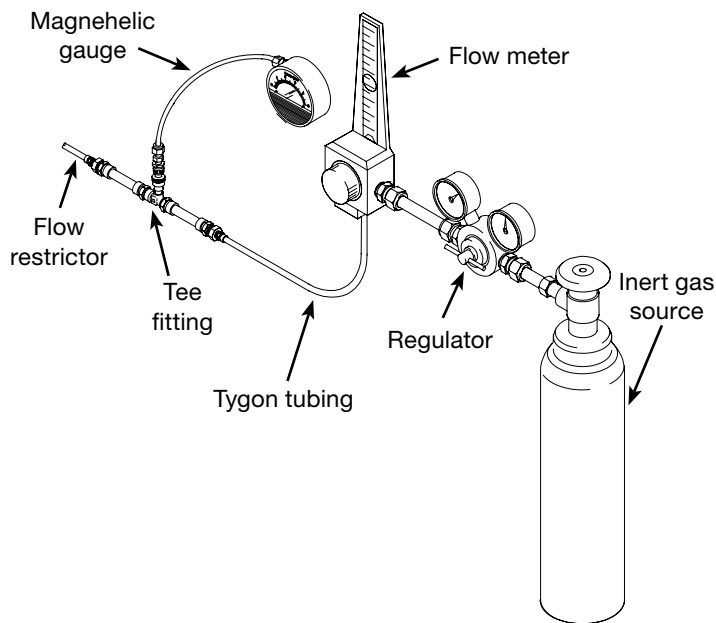
- Magnehelic® gauge for measuring internal pressure from 0 to 5 in.H₂O (0 to 12.4 mbar)
- Swagelok tube fittings with knurled nuts for 1/4, 3/8, and 1/2 in. weld fittings
- Flow restrictors
- Length of 1/4 in. Tygon® tubing
- Two cases for spare parts
- Carrying case with cavities for optional fittings
- Instructions

Optional fitting packages available in 1/16, 1/8, 3/4, and 1 in. sizes.

Component	Ordering Number
Internal purge pressure kit for 1/4, 3/8, and 1/2 in. tubing	SWS-PURGE-KIT
1/16 in. fitting package	SWS-PURGE-KIT-01
1/8 in. fitting package	SWS-PURGE-KIT-02
3/4 in. fitting package	SWS-PURGE-KIT-12
1 in. fitting package	SWS-PURGE-KIT-16



Internal Purge Pressure Kit for 1/4, 3/8, and 1/2 In. Tubing



Stainless Steel Flux

Thicker walls require more heat during gas tungsten arc welding. Swagelok stainless steel flux serves as a reactive agent with the arc, enabling operators to significantly reduce bead width and increase penetration by as much as 300 %. By using Swagelok flux, an operator will be able to reduce the amount of heat required for full penetration and maintain the critical phase balance of the Alloy 2507.

Features

- Provides deeper penetration, reduced bead width, and reduced heat-affected zone when welding thick-walled tubing.
- Is ideally suited for use with Sandvik Alloy 2507 and other super-duplex stainless steels.
- Allows operators to autogenously weld Alloy 2507 and maintain critical phase balance.
- Kit includes 1 oz (30 mL) stainless steel flux, brush, and measuring cup.



Ordering number:
SWS-FLUX-1



Tube Facing Tools

A crucial step toward consistently acceptable welds is ensuring tube ends are properly prepared for welding. The Swagelok tube facing tool is designed to machine flat, smooth, square, burr-free and chamfer-free tube ends. The tool can be used on 316 stainless steel, carbon steel, titanium, and most nickel-based alloys.

Features

- For tube outside diameter sizes 1/8 to 2 in. and 3 to 52 mm
- For wall thicknesses from 0.02 to 0.109 in. (0.5 to 2.8 mm)
- Chip deflector works in conjunction with cutting insert to prevent chips from curling into tube inside diameter
- Heavy-duty industrial motor with easy speed (r/min) adjustment and control
- Graduated spindle advance for controlled material removal
- Clear plastic safety shield protects operator from the cutting area
- Cutting insert and spindle designed for fast, easy setup and insert change
- Standard Swagelok welding system UCI collets provide rigid holding of components
- CE marked
- Storage and shipping cases for facing tool and optional bench-mount stand; collets; and cutting inserts included



Specifications

Power Requirements	115 V (ac)
	230 V (ac)
Weight	Approx 12 lb (5.4 kg)
Length	18 in. (45.7 cm)
Width	8.5 in. (21.6 cm)
Diameter	4.5 in. (11.4 cm)
Minimum Tangent Length	1 in. (25.4 mm)

Ordering Information

Geographic Region	Description	Ordering Number	
		Facing Tool Only	Facing Tool With Stand
North America	115 V (ac), 2-pronged plug	SWS-232EP-1	SWS-232EP-1-BMB
United Kingdom	115 V (ac), 3-pronged plug	SWS-232EP-5	SWS-232EP-5-BMB
Continental Europe	230 V (ac), 2-pronged plug	SWS-232EP-7	SWS-232EP-7-BMB

Use in other geographic regions may require an adapter.

Options and Accessories

Cutting Inserts

Replacement cutting inserts, available in multiples of 10, come in a case. One cutting insert is included with the facing tool.

Ordering number: **SWS-232-BIT-HST**



Bench-Mount Stand

The bench-mount stand features a quick-release latch that requires no tools. This makes conversion from portable to bench-top use fast and easy.

Ordering number: **SWS-232BMB**



Safe Product Selection

When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

Caution: Do not mix or interchange parts with those of other manufacturers.

Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit swagelok.com or contact your authorized Swagelok representative.

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